

Our basic model hypothesizes managerial influences on public organizational and program performance, when managers exert effort on external management as well as when they perform the standard internal functions that comprise managers' responsibilities. Chapter 3 has demonstrated that managers do operate externally – presumably to buffer against negative shocks, and also to exploit resources and opportunities in the organization's environment on behalf of the agency and its programs. Indeed, that chapter illustrated the nonlinear interaction of managerial networking with key resources for school districts. The chapter also showed that managerial efforts outward generate performance dividends, although these are not neutrally distributed to stakeholders; networking can have inequitable distributional consequences. Before we address the subject of internal management (Chapter 5), we need to revisit both managerial functions and introduce an aspect of internal and external management that is implied in the initial model but thus far not incorporated into the empirical analyses: the actual quality of management. We proceed to show that quality not only affects performance but links to managerial networking in interesting, nonlinear ways.

The “M” terms in the model obviously refer to managerial functions that have both a quantity, or degree of activity, aspect as well as a quality component. Our measure of managerial networking, introduced in the preceding chapter, obviously has advantages – including validity and reliability; but it lacks a “quality” component. Managers who network can do so without much talent or perspective; alternatively, they can correctly assess their organization's environment, allocate their networking skills wisely, and tap and/or protect from the most salient forces in the agency's setting. We can expect a considerable range of quality to be present across the individuals managing public organizations. This chapter explores this aspect of public management.

Doing so is important because a basic tenet of public administration is that the quality of public management can make the difference between

success and failure in the delivery of public policy results (Lynn 1984). Despite this widespread belief, the notion has rarely been carefully tested. In this part of the book, we develop a measure of managerial quality suitable for certain kinds of empirical settings and then test whether high-quality management contributes positively to public program performance.¹ Public education, an important policy field, once again provides the context for the investigation (Raffel 2007).

This relatively straightforward test of the management quality hypothesis confronts a number of challenges. The notion of managerial quality itself, although often used in teaching, research, and practice, is seldom clarified in a way that facilitates systematic investigation. Difficulties of measurement on this score have also impeded research. In addition, many other influences shape what happens via public programs, so the research needs to take into account these realities. The next sections of this chapter treat these challenges systematically; then our research on the management quality hypothesis is presented and discussed.

The Gordian concept of public management quality

As indicated earlier, the proposition that public management contributes to the performance of government is at the core of a great deal of scholarship; but few systematic efforts have tested for the relationship empirically. The case study and qualitative literature, on the other hand, indicates that good management can be a particularly critical contributor to program success (see, for instance, Doig and Hargrove 1987, Hargrove and Glidewell 1990, Behn 1991, Thompson and Jones 1994, Ban 1995, Riccucci 1995, Cohen and Eimicke 1995, and Holzer and Callahan 1998). Indeed, this body of work suggests multiple and complex channels of managerial influence.

All the same, the conceptual issues are immense. A consideration of management's hypothesized impact on program performance, for instance, must incorporate some attention to the notion of leadership – a theme of substantial importance among researchers. The literature on leadership is huge and complex, however (see Rainey 2009). Rainey and Steinbauer's (1999: 18–19) succinct characterization serves as a daunting reminder of the difficulties of capturing this key notion in a satisfactory and easily measurable form: "[T]he topic of leadership is vast, richly elaborated, and inconclusive. . . Enough listings of desirable leadership skills and qualities

could be gathered to build another great pyramid. They vary widely, and none of them can claim conclusive validation.”

The growing emphasis on quality – and quality management – in recent years (see Beam 2001) overlaps the attention to leadership in public programs. Interestingly, an examination of this theme also reveals an unresolved tension as to what kinds of broad managerial efforts are likely to be most critical for delivering performance. Much of the attention to quality or excellence in recent years, in the United States and elsewhere, has focused on the value of “entrepreneurial” management for achieving results. The popularity of Osborne and Gaebler’s (1992) volume illustrates this point, and the National Performance Review of the Clinton years – a reform effort with direct intellectual ties to the same perspective – reflected a similar emphasis (Gore 1993; see Rainey 2003: 408–11). The new public management, more broadly, emphasizes these themes. Some analysts have seen in these approaches a diminished view of management, however (Lynn 2001), or one, they argue, likely to limit what public agencies can deliver (see Goodsell 1993 and Moe 1994). Terry (2002) in particular contends that administrators perform a key function by executing “conservatorship”: preserving established institutional forms and activities that have developed over time and would be difficult to reestablish (for a more elaborate discussion of this point, see O’Toole and Meier 2007).

Indeed, while risk-taking, entrepreneurial activities can sometimes bring benefits, protective, conserving efforts can be especially valuable under other circumstances (see Meier *et al.* 2007). As we have argued earlier, the multiple managerial functions, which likely work through different causal pathways, should all be considered by those who desire to probe the connection between management and performance. Although this general point may be valid, any systematic effort to explore the link between management quality and performance across a large number of cases must confront a nearly intractable measurement challenge. If high-quality public management embraces a multitude of difficult-to-define dimensions and if different strategic approaches and managerial orientations might be appropriate under different difficult-to-specify conditions, how can one test the proposition that good management contributes to good performance across the spectra of cases and circumstances?

The conceptual complexity thus fuels a serious measurement challenge. In the broader literature beyond the public sector, efforts have been made to measure the quality of management (Bloom and van Reenen 2007), but so far the criteria used have not been applied in empirical studies of public management.

With respect to the public sector, for some years now the Government Performance Project has developed comprehensive measures of government management systems via a criterion-based approach. Most of this research effort has been devoted to measures of management itself, and management capacity, rather than managerial impacts, although some relationships between these measures and managerial (intermediate) outcomes have been demonstrated (Donahue, Selden, and Ingraham 2000).

A few additional notes of progress have been sounded in the effort to probe with systematic work the link between elements of public management and ultimate program performance. Wolf (1993) examines subjective assessments of agency leadership, and finds that these are correlated with agency effectiveness. Hennessey (1998) suggests a relationship between public organizational performance and leadership, defined in terms of Bennis's (1993) four competences, on the basis of data from nine offices in two federal agencies. His core argument is that leaders shape organizational culture and, thereby, performance. Attention is directed primarily to reinvention efforts, however, and only secondarily to performance itself. Further, the small number of cases, subjective measurement of leadership features, and lack of controls attenuate the conclusiveness of the work.

Rainey and Steinbauer (1999) have proposed a "theory of effective government organizations" incorporating a number of features that might explain effectiveness. Several characteristics they analyze are part of, or, at minimum, closely related to, public management – including the development of human resources (see Chapter 5), various elements of task design, and, in particular, leadership characterized by certain attributes. Rainey and Steinbauer craft their argument on the basis of a review of existing literature on the likely determinants of effectiveness. While they do no testing, they do "posit" that leadership is likely to "emerge as" among the most important drivers of effectiveness in governmental organizations (28).

Brewer and Selden (2000) report a systematic empirical project based on Rainey and Steinbauer's theoretical argument. They explain a large portion of the variance in federal employee perceptions of organizational performance, as interpreted in rather broad terms, across twenty-three agencies. The model they develop and test includes a leadership and supervision measure, which is positively related to perceptions of performance, although its predictive power is relatively slight. The measure is limited to employee perceptions of how their immediate supervisors rate; and, as Brewer and Selden note, "leadership and supervision may contribute to organizational

performance *indirectly*” (704, emphasis in original). Indeed, several other variables they analyze that contribute more to explaining the variance in performance are likely influenced by management as well.

These findings and arguments are provocative, but they are limited in a number of ways and clearly not definitive. Most of the empirical work is cross-sectional, and it is important to test for the impact of public management by incorporating a longitudinal dimension as well. Most of the measures of performance are perceptual and/or intermediate, and thus may be biased, given that the respondents are evaluating their own performance (see Meier and O’Toole 2010). In addition, the measurements developed thus far capture only a limited part of the concept of quality management as it has been understood by scholars.

If characterizing and measuring managerial quality is challenging, even more demanding is the task of doing so for individuals in specific managerial positions. The general task of individual performance appraisal in the public sector has been notoriously difficult to conduct (Kellough 2006; see also Murphy and Cleveland 1995). The approach adopted in the present investigation does not resolve the host of issues under dispute, but it does rely on decision making by knowledgeable political principals in contact with the particular managers whose impact is being analyzed here. To be precise, the method relies on assessments revealed in salary determinations. This approach might seem ironic, since when individual performance appraisals are used in public agencies to determine pay – so-called “pay for performance” systems – researchers have consistently noted serious flaws (Ingraham 1993; Rainey 2009). Under certain conditions and with certain caveats, we argue below, decisions about pay can provide a defensible indirect measure of management quality, particularly given the conceptual and measurement difficulties associated with developing a more direct yet still feasible alternative (for a similar approach to measuring quality at the middle manager level, see Johansen 2008).

In the next section, we sketch our general approach to measuring managerial quality in the kinds of settings that will be analyzed later: public education via the Texas school districts data set. Our focus is once again on the top managers there: school superintendents. We propose an aspect of managerial salary as a reasonable proxy measure for testing the management quality hypothesis. We then develop the specifics of our empirical measure and finally model our tests of school system performance. We then show how managerial quality can interact with managerial networking to avoid problems of diminishing returns.

Measuring superintendent quality

As outlined above, what is needed from public managers seems to vary by program, agency, time, and context. Any simple measure of the quality of management, therefore, is likely to be biased.² Those in the best position to know and evaluate what and how managers are doing are knowledgeable observers in the local setting at the time, particularly those with access to information about managerial behavior, organizational morale, environmental demands, and performance results. The strategy in this study is to tap into the judgments of just such a set of individuals who observe the managers – school system superintendents – on a day-to-day basis: members of the school board.

Rather than seeking attitudinal judgments by the school board on management quality (thus merely moving the problems of definition from researchers to practitioners), we assume that actions reveal evaluations. Each school board makes an annual assessment of the superintendent's performance and then sets his or her salary for the following year. In that determination, we think that management quality plays a role – not an exclusive role, but a role nonetheless. Similarly, deciding the compensation to offer a new superintendent contains an inherent quality assessment.

Quite clearly, political principals face limitations in judging managerial quality – in particular, limitations in access to relevant information. For governmental jurisdictions that perform only one policy function, these limits are less severe. To the extent that political leaders in such situations are interested in attending to the quality of management in their jurisdictions, they know where to look and are undistracted by competing or overlapping responsibilities. School districts are among the governmental jurisdictions fitting this stipulation.

Furthermore, isolating on the managerial quality aspect of a superintendent's salary is facilitated by several characteristics of the market for superintendents. That market can be characterized as competitive with substantial information. School district managerial talent is mobile within the state (and somewhat mobile across states). While some superintendents remain for extended periods in one locale, most individuals typically move through several districts as they pursue their careers. With few exceptions, positions are filled after open searches that are often conducted with the assistance of a search firm. Superintendents seeking to move (the average tenure in Texas is approximately 5.3 years) will know the salary paid to the previous

superintendent and can access an extensive state database on the district and its characteristics. Similarly, the hiring district will have extensive information about how the candidate's current district (or school, if it decides to hire a principal) has performed, and assessments of an individual superintendent candidate's management ability are relatively easy to obtain via the established network of school board members. In short, a manager with a good track record is likely to have several options, so that a school district seeking to hire such a manager will need to offer a premium, all other things being equal. There are no regulatory floors or ceilings regarding compensation. The sheer range of salaries in the study (\$35,000 to \$205,228 in 1999 [mean = \$74,400; standard deviation = \$24,087]) supports the notion that market dynamics are at work.³

Salary premiums operate within a salary structure that recognizes basic understandings about the job, however (see Ehrenberg, Chaykowski, and Ehrenberg 1988a, 1988b). First, the most significant determinant of salaries, both normatively and empirically, is the size of the district; as the size of the job expands, salaries increase proportionately. Second, human capital factors such as education, experience, and training will result in additional adjustments to salaries. Third, personal characteristics of the individual are likely to affect salaries. Particularly relevant are such factors as race, ethnicity, and gender. Although discrimination might play a role here, some districts, such as large inner city districts, will prefer a minority superintendent for political reasons. Fourth, because the relationship between salaries and performance can be expected to be reciprocal – that is, superintendents could also be rewarded for performance in the past – a control for prior school district outputs is needed.

Our strategy of analysis is to take variables measuring each factor that should influence the manager's salary and use them to predict the manager's actual salary. The residual from this equation – that is, the variance in salary not accounted for by job size, human capital, personal characteristics, and past performance – will contain the assessment of managerial quality (for a similar residuals-based measure in a different context, see Palmer and Whitten 1999: 629). This measure is quite clearly a messy one, since the residual contains all those factors not included in the model – such as the ability to sell oneself, experience and renown as a football coach, physical characteristics and other irrelevant factors, as well as the assessment of quality. The impact of this measurement error will attenuate any relationships between the quality measure and organizational outputs, however (Carmines and Zeller 1979; Bollen 1989: 159–67). The measurement error, as a result, creates a bias in favor of null findings.

Measuring managerial quality

How might a superintendent, a single manager at the top of the hierarchy, actually affect student performance? In the last chapter we discussed how external efforts on the part of top managers might shape organizational outputs and outcomes, and in the next chapter we examine some of the details of how internally directed management can contribute. Here we note several causal paths, some internal to the organization and others partially external. Our interactions with superintendents, administrators, and teachers suggest several ways that top managers can boost performance. First, superintendents can recruit, train, and reward talented mid-level administrators (school principals) and teachers. Of particular importance is recruiting individuals who share organizational goals in regard to student standards and approaches to education. Second, superintendents, like all organizational leaders, can motivate employees to invest greater effort in the organization. Superintendents do so by providing and communicating a vision for the organization. They can also generate greater commitment by handling the inevitable problems that arise in the environment; in particular, they can provide political cover for teachers and administrators. Third, superintendents can affect the student learning environment by mandating the adoption of specific educational reforms. The list of possible reforms is endless, and reforms need to be matched to the specific needs of the students and the skills of teaching faculty. Part of this matching process relies on the management ability of the superintendent. Fourth, superintendents can contribute to the predictability and reliability of the system for those who operate within it. They can provide stable processes and avoid the disruptions of policy churn (Hess 1999) and other activities that interfere with the process of educating children.⁴ Finally, superintendents can acquire more resources for the organization. While most of these resources will then appear in the district's budget, some may be intangible – for instance, the goodwill of local business leaders or the support of parent groups.

To generate the residuals-based measure of managerial quality, we use a relatively common salary model from the literature (see Ehrenberg, Chaykowski, and Ehrenberg 1988b). The dependent variable is the logged annual compensation for the superintendent. The log transformation is used to ease the problem of skewed data resulting from the large salaries associated with Texas's megadistricts. The log transformation also permits the relationships to be interpreted as elasticities. This salary figure includes only the official

base salary; it omits the perks some districts offer, such as club memberships, cellphones, and transportation benefits that are not reported to the state of Texas.

Three district characteristics are included as independent variables: the district's total budget, tax rate, and average revenue per student; all three variables are logged. Total district budget is our measure of district size, which should be the strongest predictor in the model. The tax rate is included because some earlier work contends that superintendents are rewarded for keeping taxes low (Ehrenberg, Chaykowski, and Ehrenberg 1988b). Revenue per pupil is a measure of wealth; certain districts will pay higher salaries simply because they can afford to do so. For some districts this decision is a matter of civic pride.

Four human capital characteristics are included: experience as a superintendent, tenure in the current job, age, and the possession of a doctorate. The first three variables are measured in years; salaries should increase both with total experience as a superintendent (most of this experience will have been in other districts) and time in the current job. Age is commonly included in models such as these, even though it is considered a surrogate for experience, which is already in the model.⁵ In terms of education, virtually all superintendents have a master's degree (98 percent), so the most salient distinction is the possession of a doctorate, which should be positively related to salary.

Three personal characteristics are included: whether the superintendent is female, black, or Latino. The predicted signs for these variables are ambiguous, depending on whether a district might see it as an advantage to hire a superintendent with a given demographic. Data on salaries, district characteristics, human capital, and personal characteristics were provided by the Texas Education Agency from their administrative database.

Finally, we include the previous year's test scores in the model. Because we think perceived managerial quality is affected by prior performance, and because quality then affects future performance, over time there is reciprocal correlation. We cannot control for prior test scores without adjusting for this endogeneity, or the quality measure's impact will be biased downward. The appropriate method is to purge the reciprocal causation via an instrumental variables technique. We do this using six student characteristics and district resources (percentage of black, Latino, and low-income students, teacher salaries, class size, and instructional funding) as instruments; the purged measure of prior performance is then included in the model. Five years (1995 to 1999) of data are used in the model, and dummy variables for

Table 4.1 Determinants of superintendent salaries

Dependent variable = logged annual compensation			
Independent variable	Slope	Error	T-score
District characteristics			
Logged budget	0.1641	0.0017	95.07
Logged tax rate	0.0272	0.0161	1.69
Logged revenue/pupil	0.0683	0.0092	7.45
Human capital			
Past experience	0.0022	0.0003	7.94
Current job tenure	0.0009	0.0002	3.63
Doctorate	0.0532	0.0045	11.79
Age	0.0004	0.0002	1.95
Personal characteristics			
Female	0.0025	0.0009	2.85
Black	0.0941	0.0183	5.16
Latino	−0.0165	0.0081	2.03
Past performance	0.0009	0.0003	3.16
R ²	0.78		
Standard error	0.1251		
F	1193.92		
N	5,127		

Note: Coefficients for individual years not reported.

individual years are included to account for the general increase in salaries over this time period.

The results of the salary model appear in Table 4.1. The predictive ability of the model (78 percent) compares favorably to other models in the literature; and, with one exception, all the variables are in the predicted direction.⁶ That exception is the tax rate, which has a slight positive association with salary rather than a negative relationship, thus indicating that superintendents are not systematically rewarded for keeping taxes low. Although the relationships in the model are interesting in terms of both personnel management and educational policy, discussion of them is beyond the scope of the present investigation. The objective of this part of the analysis is merely to remove as many “non-quality” factors from the superintendent’s salary as possible. The regression residuals are then standardized (converted to a mean of zero and a standard deviation of one) for use in the subsequent analysis. Because salaries are set before the school year begins, the quality measure has a natural one-year lag in its relationship to current organizational performance. As a consequence, any relationships that are

found can be attributed to quality influencing performance rather than district performance influencing boards' decisions about superintendent compensation.

Modeling performance

Our measure of management quality can now be related to educational performance. Given the preliminary nature of such a measure in public management, this effort might be viewed as an attempt to determine if the measure has external validity – since managerial quality should affect organizational performance when one controls for the resources and constraints on the core organization. The section first identifies the control variables in the model and then discusses the measures of organizational performance.

Control variables

As discussed in earlier chapters, any assessment of organizational performance must control for both the difficulty of the job faced by the organization and the resources in its possession. We use the well-developed literature on educational production functions for guidance and include the same set of control variables used in Chapter 3. These eight variables are three measures of task difficulty and five measures of resources.⁷ These are used strictly as controls, to make sure that any findings we have relative to management quality are robust to the inclusion of factors normally linked to educational performance.

Performance measures

This chapter incorporates eleven different performance indicators in an effort to determine if management quality affects a variety of organizational outputs. The most salient is the student pass rate on the Texas Assessment of Academic Skills.⁸ Our measure is the percentage of students who pass all (reading, writing, and mathematics) sections of the TAAS.

Four other TAAS measures are also useful as performance indicators. TAAS scores for Anglo, black, Latino, and low-income students are included as measures of performance indicators. TAAS scores are linked most directly to basic skills and performance levels for all students. Many parents and policy makers are also concerned with the performance of school districts

regarding college-bound students. Four measures of college-bound student performance are used: the average ACT score, the average SAT score, the percentage of students who score above 1,110 on the SAT (or its ACT equivalent), and the percentage of students who take either test. As mentioned in Chapter 2, Texas is one of the few states where both the ACT and the SAT are taken by sufficient numbers to provide reliable indicators of both.

The final two measures of performance might be termed bottom-end indicators: attendance rates and dropout rates. Dropout rates, while it is conceded that they contain a great deal of error, are frequently also used to evaluate the performance of school districts. The official state measure of dropouts is the annual percentage of students who leave school from eighth grade onward.

Findings

The first school district performance measure assessed is the overall TAAS score; these results are presented in the first two columns of Table 4.2. The proposed measure of managerial quality is positively and significantly related to school district performance. Since the measure is standardized, and thus ranges between approximately -3 and $+3$, these equations suggest that the maximum impact of quality management is approximately 5.3 points on the TAAS. Although management quality is clearly not the most important factor in determining test scores, in substantive terms 5.3 points is a meaningful amount of change (the standard deviation of TAAS scores is approximately 12.5). To check for omitted variables bias, we ran regressions with forty-one additional variables, without affecting the findings here. These variables included additional student characteristics, budget expenditures in various categories, teacher assignments, and additional measures of district wealth.

To explore a bit more how management quality might work through other factors known to influence performance, a second regression in Table 4.2 adds three variables: parental involvement, community support, and student attendance. Parental involvement and community support were assessed via a superintendents' survey; because they reflect the impressions of the superintendents, these measures might contain some bias.⁹ All three new measures are positively associated with organizational performance; in the case of student attendance, the relationship is a strong one. Including these factors in the model reduces the size of the management coefficient.

Table 4.2 The impact of management on performance: standardized tests

Dependent variable = TAAS pass rate						
Independent variable	Slope	T-score	Slope	T-score	Slope	T-score
Management quality	0.8866	7.76*	0.4888	3.23*	0.8334	5.13*
Managerial networking	–		–		0.6418	4.27*
Parental support	–		0.3984	2.01*	–	
Community support	–		0.9572	4.51*	–	
Student attendance	–		3.7705	20.90*	–	
R ²	0.59		0.67		0.60	
Standard error	8.00		6.78		7.51	
F	574.29		298.36		264.25	
N	5,126		2,498		2,502	

Notes: Coefficients for annual dummy variables are omitted. Equations also control for teacher salaries, state aid, class size, teacher experience, noncertified teachers, and the percentages of black, Latino, and low-income students. * = significant at $p < 0.05$.

These relationships suggest that some of the impact of quality management operates through increasing community support and parental involvement.¹⁰ Even with the addition of the attendance and support scores, however, management quality as defined in this study has a significant and positive effect on the overall performance of the organization.¹¹

This final regression in Table 4.2 includes the managerial networking measure from Chapter 3 (four nodes). Networking is uncorrelated with the managerial quality measure ($R^2 = -0.01$), and thus both positively influence organizational performance. The size of the coefficient changes only because the networking measure is survey-based, and thus the third equation reflects the missing data from survey nonresponse. Controlling for networking has little impact on the strong positive relationship between quality and performance. Because both measures have a mean of zero and a standard deviation of one, they can be directly compared to each other. The impact of managerial quality is about 30 percent larger than the impact of managerial networking on the TAAS scores.

A measure of managerial quality should be general; it should be related to a wide variety of organizational outputs. The relationship should, of course, vary across different measures of outputs, because some problems are likely to be more sensitive to the quality of management in the organization. As problems become more intractable, for example, one would expect that

Table 4.3 Management quality and other measures of performance

Performance measure	Slope	T-score	R ²	N
Latino pass percentage	0.4832	2.53*	0.38	4,243
Black pass percentage	0.7014	2.68*	0.38	2,965
Anglo pass percentage	0.8700	7.60*	0.41	5,053
Low-income pass percentage	0.8998	6.17*	0.50	5,093
Average ACT score	0.0817	3.94*	0.36	4,248
Average SAT score	3.1534	2.85*	0.50	3,516
Percentage above 1,110	0.6535	4.23*	0.29	4,682
Percentage tested	0.0113	0.05	0.12	4,601
Dropout percentage	-0.1241	8.21*	0.16	5,026
Class attendance	0.0866	7.49*	0.24	5,126

Notes: All equations control for teacher salaries, instructional expenditures per student, class size, teacher experience, percentage of teachers not certified, percentage of black, Latino, and low-income students, and yearly dummy variables. * = significant at $p < 0.05$.

management would matter less, simply because what the organization could do to solve such problems is more limited.

Table 4.3 presents the regression coefficients for management quality and the ten additional performance indicators. Each equation also controls for all the variables included in the first regression in the table.¹² The performance of the managerial quality variable can be appropriately characterized as stunning. For nine of the ten additional performance indicators, management quality is significantly related to performance in the predicted direction (the exception is the percentage of students who take college boards). This pattern of relationships, along with those in Table 4.2, amounts to strong evidence that the residual-based measure of managerial quality is tapping at least in part some aspects of how well superintendents manage their districts.¹³

We also replicated the results of Table 4.3 and included the managerial networking variable. For all the dependent variables but black pass rates and the percentage of student who took either the SAT or the ACT, the relationships were statistically significant and in the correct direction. As one final robustness check, we reestimated the equations with a lagged dependent variable. Such a test is stringent, since it requires managerial quality to have an impact over and above last year's scores – in short, to continue the improvement that generated the higher salary in the first place. Table 4.4 reports an abridged set of results, which show that managerial quality maintains a statistically significant impact for five of the outcome indicators – Anglo

Table 4.4 Management quality in an autoregressive specification

Performance measure	Slope	T-score	R ²	N
TAAS pass rate	0.1049	1.39	0.84	5,125
Latino pass percentage	0.0782	0.50	0.59	4,398
Black pass percentage	0.3811	1.82*	0.56	2,850
Anglo pass percentage	0.1742	2.16*	0.68	5,037
Low-income pass percentage	0.1293	1.20	0.73	5,083
Average ACT score	0.0435	2.24*	0.47	4,018
Average SAT score	1.4379	1.59	0.68	3,216
Percentage above 1,110	0.3853	2.68*	0.38	4,632
Percentage tested	-0.0441	0.21	0.33	4,485
Dropout percentage	-0.0843	6.19*	0.32	5,024
Class attendance	0.0150	2.17*	0.73	5,125

Notes: All equations control for teacher salaries, state aid, class size, teacher experience, percentage of teachers not certified, percentage of black, Latino, and low-income students, and yearly dummy variables. * = significant at $p < 0.05$.

pass rates, ACT scores, college boards above 1,110, dropouts, and attendance. If the criterion is relaxed to a 0.10 with a one-tailed test, given the direction specified, the results for the overall TAAS rate, the black pass rate, and SAT scores are also significant in the correct direction.

Managerial quality and managerial networking: diminishing returns?

At the outset of this chapter we noted that our measure of managerial networking focused only on the quantity of the networking, not on the quality of the networking. The creation of a management quality measure provides us with the opportunity to investigate further the relationship between managerial networking and organizational performance. What, for example, is the *functional form* of the link between management and performance? Our model specifies some hypothesized relationships, and we have seen that there is evidence in support of some of its clearest notions. What about the details, though? One possibility, of course, is that the two are linked in a straightforward linear fashion over the full range of the management variables: additional increments from management, or various types of management, may add some regular and fairly constant amount of outputs or outcomes. Alternative possibilities, however, are myriad. The relationship might be curvilinear; or there may be diminishing returns; or there may be

some critical managerial contribution, past which point performance accelerates more rapidly. Alternatively, the relationship might be exceedingly complex, in which case plotting a management-versus-performance curve might encompass twists and turns of confusing sorts. Sketching the possibilities *de novo* would produce graphic patterns reminiscent of so many serpents lying in the sand – some stretched out lazily and signaling simple forms, others arching and wiggling across the sand (for a complete exposition of this analysis, see Hicklin, O’Toole, and Meier 2008).

In the initial formulation of the model, we explicitly suggested some nonlinearities – in particular on managerial networking externally into the interdependent environment, and specified nonlinearities with respect to resources and constraints in the organization’s setting. A careful further examination of the model and its features suggests that other nonlinearities may also be expected, however. These have to do with, for instance, opportunity costs and potential tradeoffs across different managerial tasks; the potential for diminishing returns from management; and the role that even internal resources, particularly those related to personnel, can play in providing a partial support or substitute for explicit top managerial effort.

This section focuses on one particular managerial responsibility – managerial networking, or managers’ interactions externally in support of the public organization and its tasks – in order to explore the nature of the functional form between this aspect of management and organizational performance. The empirical work presented thus far has demonstrated overwhelming support for the positive effect of networking (M_2) on performance. More networking is correlated with an increase in performance, when controlling for resources and constraints in the environment as well as selected other managerial influences. Networking seems to be the gift that just keeps on giving. With the extant evidence, it could be concluded – rather implausibly, granted – that managers who want to increase performance should devote as much time as possible to externally oriented networking.

Does this inference make sense, though? Are there times and circumstances when it is probably better to network less, perhaps in the interest of fulfilling another managerial requisite? Is it possible for managers to devote too much time to managing the external environment – to the detriment of the organization’s performance? Could the benefits of networking be contingent on the characteristics or talents of individual managers? Could organizational characteristics affect this relationship? First we explore the reasons to anticipate a possible nonlinear relationship, and then we outline a number of contingencies that might affect this relationship.

Resources, time, and the managerial balancing act

There are reasons to expect that very high levels of networking may have diminishing, or perhaps even negative, effects on organizational performance. Most of the literature on the benefits of networking focuses on how managers form relationships with other organizations and stakeholders to secure benefits, fend off disruptions, and identify opportunities. Managers often network with others in an effort to attract and acquire more resources for the organization. The environment and the relevant network actors do not have infinite resources, however. While managerial networking should result in considerable payoffs much of the time, there could be a limit to these payoffs – meaning that at some point there is nothing, or, at least, less, to gain from more external interactions.

A related point has to do with opportunity costs. Managers must perform functions internally within their institution, not just outside. At some point, the time spent on trying to extract the last bit from resources or buffer the agency from all potential disturbances could have been better spent elsewhere. The formal model sketched in Chapter 2 implies some sort of balancing between managerial responsibilities without specifying how and when the tradeoffs actually appear. More precisely, the model does not specify the relationship between M_1 (core internal functions) and M_2 (external, or networking, management). Although there is no reason to believe that these two functions are necessarily a zero-sum effort – with a full tradeoff at the margin between the two – managers who spend most of their time on one component to some neglect of the other may generate performance setbacks, or, at least, suboptimal results.

Regardless of whether the limits on the benefits of networking come from increasing difficulty in tapping opportunities/fending off perturbations from the environment, or from tradeoffs among the multiple functions of management,¹⁴ the consequence should be the same: at higher levels of managerial networking, still more networking could be expected to produce little in the way of positive performance payoffs for the organization. This relationship can be tested with an hypothesis: *the relationship between networking and performance is nonlinear, with diminishing returns at the higher levels.*

We might also consider contingencies. Although we expect that, in the aggregate, higher levels of networking will have diminishing effects, some managers and certain public organizations may be able to ensure that time

spent networking continues to result in steady performance dividends, even at higher levels of networking. Drawing on the two explanations as to why the relationship may be nonlinear, we can speculate on what types of managers and organizations may be able to avoid diminishing returns.

Indeed, we have already noted two dimensions of such managerial activity as networking: a “quality” or skill component, along with the “quantity” or effort aspect. The original model does not specify the relationship between these two elements, but it seems reasonable to expect that one influences the functional form of the other. The most straightforward way of interpreting the relationship would be that management quality mitigates the otherwise expected diminishing returns hypothesized above.¹⁵ Second, the model clearly suggests that aspects of “management” and aspects of personnel/staffing perform some overlapping functions. Each, accordingly, should be considered for generating nonlinear relationships for managerial networking.

If the explanations for the general, hypothesized nonlinear relationship sketched above are correct, a highly skilled manager might be able to avoid negative returns to networking by being just active enough in the organization’s environment to gather the crucial benefits feasibly available. This expectation is grounded in a basic rational choice framework, which suggests that managers are likely to try to assess when the “costs” of networking (in terms of time spent and opportunities forgone) can no longer be expected to be outweighed by the benefits that they expect to reap. The best managers should be more adept at weighing the costs and benefits, and they will therefore be the most efficient with their time, thus avoiding spending too much time in the networked setting, presumably at the expense of other managerial possibilities that also contribute to performance.

This chapter has demonstrated that managers vary considerably in quality, and the abilities of individual managers can have a strong impact on their behavior and their organization’s performance. For the best managers, therefore, we may find that this nonlinear effect disappears – a relationship we test with a second hypothesis: *the relationship between networking and performance is positive and linear, when controlling for managerial quality.*

The second explanation as to why increased networking may not always be positively related to performance centers on the tradeoffs made by top managers when choosing to apportion time and effort between internal and external management. Organizations obviously need a certain amount of the former to function properly – what Woodrow Wilson (1887) referred to, in a household analogy, as the “management of the fires and the ovens.”

Neglecting these managerial requirements can be expected to result in poor performance. Managers must find the right balance in splitting their time so that internal needs are not neglected and external opportunities are sufficiently exploited. Organizations may differ, however, in the extent to which these tradeoffs bind tightly. Some managers may be able to hire and use administrative staff to take care of straightforward but important internal managerial functions, thus freeing up the top manager to spend more time externally. These staff become managerial capacity – the ability to take action if opportunities arise. If a manager has an executive staff that can coordinate some of these internal management functions (and so an aspect of M_1 – a subject explored more systematically later in this book), significant tradeoffs may be obviated (see Chapter 6). This line of reasoning leads to additional hypotheses: *the relationship between networking and performance is nonlinear for those organizations with fewer administrative staff*; and *the relationship between networking and performance is positive and linear for those organizations with more administrative staff*.

Our argument about the diminishing marginal returns of networking can be tested by simply adding a squared value of networking to our basic equation, with the expectation that the slope for the linear term will be positive and the slope for the squared term negative. For the empirical analysis, we use once again the Texas school districts data set. Our analysis includes our survey data from superintendents as conducted in 2000. To these survey responses, we added eight years of data (1995 to 2002) from the Texas Education Agency.¹⁶ Because this analysis involves a pooled time-series approach, we included dummy variables for the individual years (fixed effects) to deal with serial correlation. We then assessed the degree of heteroskedasticity with pooled diagnostics, and found the levels well within acceptable limits.

Our measure of performance is the percentage of students in a district who passed all (reading, writing, and mathematics) sections of the TAAS. For managerial networking we use the four-node factor score derived from the survey responses. We also include the same measure of managerial quality that was introduced in the preceding empirical analysis. Two sets of hypotheses specify that the nonlinear relationship between networking and performance is conditioned by another variable: administrative capacity. Administrative or management capacity can be measured in a straightforward manner; it is simply the percentage of employees who are classified as central office staff (see Chapter 6). This measure includes assistant superintendents and staff positions such as the business manager, the human resources function, and others, but it excludes staff assigned at the school

Table 4.5 The nonlinear relationship between networking and performance

Dependent variable = student pass rates on TAAS				
Independent variables	Linear		Nonlinear	
	Slope	T-score	Slope	T-score
Managerial networking	0.883	7.54	1.970	4.21
Managerial networking squared	–		–0.232	2.40
R ²	0.611		0.612	
F	271.93		245.59	
N	4,182		4,182	

Notes: All equations control for teacher salaries, state aid, class size, teacher experience, percentage of teachers not certified, percentage of black, Latino, and low-income students, and yearly dummy variables. F-test for added variable yields F-statistic of 5.176 and probability of < 0.0165 .

level (principals, counselors, etc.). Our eight usual controls, resources and constraints from the environment, are also included in all analyses.

Table 4.5 provides the abridged regression results for the linear and nonlinear estimation of managerial networking's impact on performance (control variables not shown). Because managerial networking is a factor score, it has a standard deviation of one; therefore, a one standard deviation change in managerial networking is associated with a 0.883 percentage point increase in TAAS exam pass rates. Over the full range of this variable, this effect size translates into a maximum possible impact of approximately 4.7 percentage points on a district's pass rate for this time period. The impact is both statistically and substantively significant. This result is similar to analyses presented earlier for different time periods.

Table 4.5 displays the results for the nonlinear estimation of managerial networking – that is, it includes a value for networking squared. As predicted, the linear term is positive and significant and the squared term is negative and significant. This pattern represents a classic case of diminishing returns. The slope for managerial networking can be calculated for any value by simply taking the first derivative of the equation and substituting in values. Since the variable's range was rescaled to be positive and runs from 0 to +5.3, the slope is steepest at low levels of networking. At a networking value of 0 (the least amount of contact with other nodes), a one-unit change in networking is associated with a 1.97 point increase in the TAAS pass rate. The impact gradually declines until a networking value of 4.25, where the slope is zero – that is, additional networking above this value does not

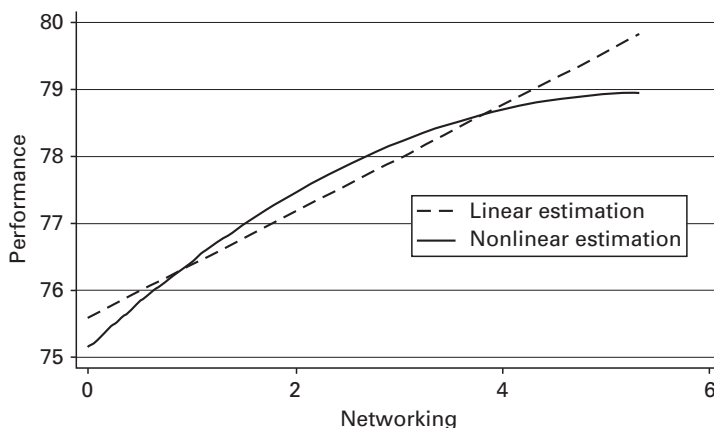


Figure 4.1 Linear and nonlinear relationship

contribute anything further to performance. In the aggregate, therefore, and as the first hypothesis states, the relationship between managerial networking and performance is clearly nonlinear. Figure 4.1 depicts the patterns for the linear and also the more accurate nonlinear estimations graphically. For the latter, the “serpentine” relationship arches gracefully.

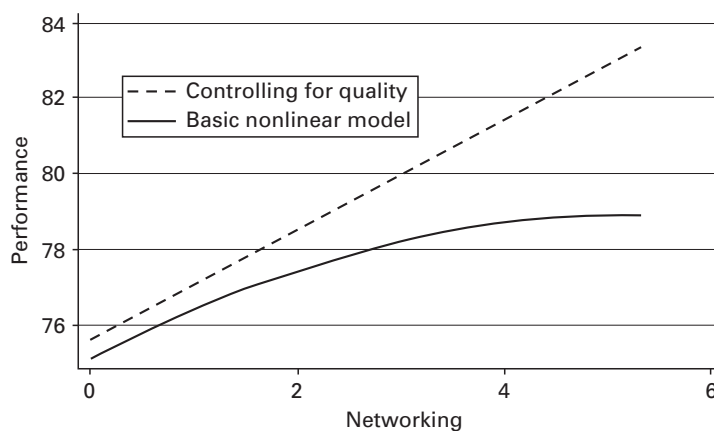
We then test the second hypothesis – that, when one controls for quality, the nonlinear relationship is expected to disappear. Table 4.6 presents the findings for the test of this hypothesis. Here it is apparent that the squared term is not significant, although it remains negative. The size of the networking coefficient itself is similar to that in the previous model, meaning that, even when we control for quality, networking is still a significant predictor of performance; managerial networking and managerial quality contribute distinguishable and positive impacts on performance. We no longer see the diminishing returns, however.

Why, exactly, does the nonlinear relationship disappear when we control for quality, as Figure 4.2 shows? Are better managers able to network more effectively (so that they always see returns), or are they able to network more efficiently (they avoid networking to the point where they see diminishing returns)? A simple look at the data can help to answer this question. Whereas the networking variable for the entire sample ranges from 0 to 5.3, the range of networking for the best managers (those managers in the top 5 percent on the quality measure) reaches a maximum value of only 4.32. The highest-quality managers limit their network activities before they generate negative returns. This fact lends some support to the idea that

Table 4.6 Nonlinear effects of networking, controlling for quality

Dependent variable = student pass rates on TAAS		
Independent variables	Slope	T-score
Managerial networking	1.519	3.27
Networking squared	−0.144	1.50
Managerial quality	0.691	5.60
R^2	0.624	
F	235.58	
N	4,114	

Notes: All equations control for teacher salaries, state aid, class size, teacher experience, percentage of teachers not certified, percentage of black, Latino, and low-income students, and yearly dummy variables. F-test for added variable yields F-statistic of 31.35 and probability of $F < 0.001$.

**Figure 4.2** Controlling for quality

better managers are more efficient, or at least more perceptive, with the ability to gauge when additional time spent in the networked environment may not garner substantial payoffs.

Organizational differences

To evaluate the third and fourth hypotheses, on the impact of central office staff size on the management–performance relationship, we split the sample into two groups to test for how the presence of administrative human

Table 4.7 Nonlinear effects of networking on performance: impacts of the relative size of central administrative staff

Dependent variable = student pass rates on TAAS		
Independent variables	Smaller central staff	Larger central staff
Managerial networking	1.382 (2.38)	2.978 (2.03)
Networking squared	−0.199 (1.70)	−0.412 (1.28)
R ²	0.69	0.43
F	203.27	18.12
N	2,256	829

Notes: All equations control for teacher salaries, state aid, class size, teacher experience, percentage of teachers not certified, percentage of black, Latino, and low-income students, and yearly dummy variables. T-scores are reported in parentheses.

resources centrally can affect the relationship between networking and performance. We are interested in whether managers who have a greater management capacity as indicated by a larger central administrative staff are able to spend more time networking without seeing the diminishing returns that are present for the sample as a whole. Again, the basic logic is that, when top managers can take advantage of internal help to share in some of the responsibilities, the superintendent is thereby freed up to spend more time on external management that also can reap performance dividends.

Table 4.7 presents the findings for these hypotheses. The two groups into which the sample is split are: those organizations with a leaner administrative staff (operationalized as the percentage of administrators in the district who work in the central district office) and those with a more bulky central administrative staff. The data for this variable has a mean of 1.88 percent. Because the mean is near to two, we split the sample so that the districts with 1 percent or fewer are in the “low central staff” category, and those districts with 3 percent or more are included in the “high central staff” group. We analyzed each subset via multiple regression to see whether the nonlinearities related to central staff and the management–performance question are as hypothesized.

Our results mostly support these two hypotheses. The relationship between networking and performance is nonlinear¹⁷ for superintendents of those districts with fewer administrators in the central office (and thus capable of a lower level of “substitute” or supportive M_1 to assist the top manager), but for districts with more central administrators (and thus a

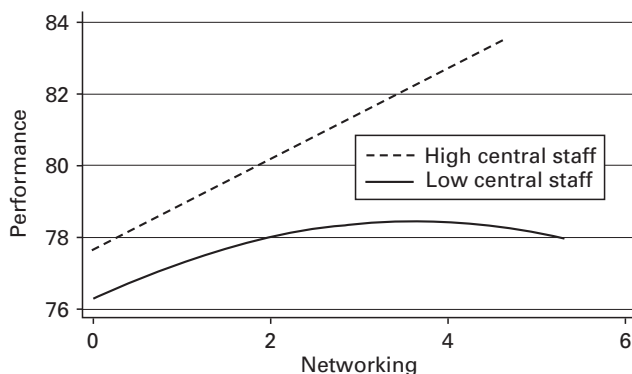


Figure 4.3 Differences by size of central staff

higher M_1 capacity) the relationship between networking and performance is positive, linear, and substantively larger. Figure 4.3 offers a picture of the differences in these relationships, with the former “serpent in the sand” displaying a rather marked curvature, while the latter slithers straight ahead.

This set of findings offers some real evidence that the effect of networking on performance may be contingent on the administrative capacity inside the organization, not merely the effort and skill of the networking top manager. The impacts of public management, in turn, are functions of the activities and skills of multiple managers; and the behavior of one person (or, in this case, the effectiveness of the behavior of one person) may be affected by the presence and activity of other managers in the organizations – in part through processes of adaptation, delegation, and backstopping.

Generalizing the management quality measure

Managerial quality measures have been successfully applied in a number of areas other than Texas school districts. All the studies use regression models similar to those presented in this chapter; all control for a wide variety of other factors that could also influence program outcomes. To retain the focus on the linkage between management and performance, we do not discuss the control variables but, rather, focus on this key relationship. The managerial quality studies cover the broadest range of organizations, including Columbian local governments, federal government agencies, state

agencies, the executive office of the US president, and even major league baseball teams (although this last-mentioned group is obviously not a set of *public* organizations). Given this wide range of cases, what “quality” means will vary a great deal. In a developing country, for example, one would not expect the market to generate an intrinsic measure of managerial quality; more rudimentary measures of quality will be used.

Avellañeda (2009a, 2009b) uses the basic theoretical model and applies it to municipal governments in Columbia. Given the location in a developing country and given that local government in Columbia is not highly professionalized, her works suggests that the concept of quality is highly portable to different public sector contexts. Her studies cover forty cities over a several-year period of time. The measure of mayoral quality – the top manager is the elected mayor of the city – includes both level of education and prior service at the local government level. While these would not be impressive indicators of quality in a developed country, there is substantial variation on these features in Columbian municipalities. Avellañeda (2009b) has as her dependent variable the percentage of eligible children who actually attend school; education is a municipal function in Columbia. Despite an extensive set of control variables to deal with structure, politics and elections, socio-demographics, and even citizen displacement by armed groups, she finds that mayoral education and experience are both positively correlated with educational outputs – although the impact is significantly dampened in areas with the presence of armed guerrilla groups. Avellañeda (2009a) relates mayoral quality to the ability to collect greater levels of local property taxes and per capital social spending. Again, the presence of local armed groups has a dramatic negative effect on the positive relationships she finds between managerial quality and program outcomes.

Jacobson, Palus, and Bowling (2010) examine state-level administrators and the adoption of new public management reforms (essentially the use of incentives and the limitation of restrictions on managers). Their purpose is to estimate a model that incorporates both internal management and managerial networking rather than to create a measure of managerial quality; they also find that the manager’s level of education is positively related to the adoption of these reforms, however.

Petrovsky (2006) examines federal agencies using the Program Assessment Rating Tool. PART scores, which were discussed briefly in Chapter 1, are an effort initiated by the George W. Bush administration to evaluate federal agencies and programs by using employees of the Office of Management and Budget (OMB) to do the evaluations. Petrovsky’s strategy is to pull out the

management element of the PART scores and use this as a measure of managerial quality for the agency. There are twenty “Yes” and “No” management questions scored by OMB personnel that focus on various quality aspects of the agency’s management. He then uses as a dependent variable a separate performance score created in a similar way that focuses on goal attainment, efficiency, and a series of other factors. Petrovsky finds a consistently strong positive correlation between management quality and agency performance even after correcting for a partisan bias variable.

In a somewhat different type of study using the basic management model, Hill (2009) attempts to determine the impact of managerial turnover on performance using a pooled time-series analysis of North American major league baseball teams. As part of the analysis, Hill creates a reputation-based measure of managerial quality. His analysis with an extensive set of controls shows that managerial quality matters for two measures of performance: whether the team scores more runs than expected and whether the team wins more games than predicted (Hill 2009: 565).

Cohen, Vaughn, and Villalobos (2010), using the formal theory specified in Chapter 2, examine the management practices of the chief of staff in the US Office of the President. Their dependent variable is how effective the chief of staff is as rated by a survey of experts in the administration. Although they present two variables – the chief of staff’s experience and the chief of staff’s working relationship with the president – as stability measures, both are very similar to the quality measures in the Columbian mayors study. Both measures of experience/quality are positively related to the perceived effectiveness of the chief of staff.

Conclusions

The analyses in this chapter offer three principal contributions. First, we develop and apply an uncommon measure of public management quality, thus fleshing out an aspect of managerial influence that is implicit in our model but that was not tapped directly with our examination of managerial networking. The application of the quality measure relies on avoiding an underspecified model for explaining salary variations, as well as on the notion that the mobility, information, and compensation for managers in the empirical setting approximate the labor market assumptions of neoclassical economics. We have argued that both conditions hold here. To the extent that these conditions do not hold, in fact, we would expect null

results. This chapter, therefore, offers an innovative, albeit indirect, overall measure of public management quality. The most important limitation here has to do with the specialized nature of the measure, or, at least, its restricted applicability. Most settings of interest do not approximate the required conditions, although investigations of some other situations – certain additional educational systems (see Johansen 2008), some public authorities, or quasigovernmental entities, for instance – might be able to use and perhaps improve on the approach taken here.¹⁸ Tapping public management quality in many other circumstances, however, will require tackling more directly some of the tough issues about what quality means, how it is related to leadership, and from what sources the requisite quality judgments can be derived.

Second, this research offers the fullest rigorous test to date of the proposition that public management quality contributes positively to performance. The results are clear and convincing. If the assumption is made that the measure of quality is valid, then the almost completely consistent results across eleven measures of performance are firm evidence indeed.¹⁹ That these results obtain despite any likely measurement error for management quality creating a bias toward null findings is particularly striking. With all the appropriate controls for the educational setting, the quality of superintendents' management makes a difference. Whether the focus is on pass rates, dropout rates, or the performance of specialized groups of students, such as those from low-income families or those aiming to attend college, management matters considerably. This set of results is even more striking given that the focus here is on only one managerial position – that of superintendent – at the top of the district's organizational structure. Since almost all school systems include additional managerial layers – at a minimum, school principals – the overall impact of management is probably even higher (see Johansen 2008).

The relationship of management quality to performance is also likely to be complex. The impact of management quality appears to be partially channeled through the mobilization of parental and community support. In addition to contributing directly to operations, then, and to dealing with political principals and external regulatory authorities, managers appear to contribute to performance by mobilizing the efforts of others who have allied interests in delivering results at the local level.

Third, managerial networking contributes positively to performance, but the returns diminish at higher levels of networking. This finding is consistent with our notions that managers apportion time and effort *across*

managerial functions, presumably because multiple contributions are needed, and the distribution of managerial time and effort is likely driven in part by managerial assessments of marginal returns to performance. It is also consistent with a conceptualization of public management as goal-directed activity aimed at coordinating people and resources to produce public value. Almost any model of the manager as an intendedly rational actor would imply a consideration of just such tradeoffs.

Even more interesting is the additional set of findings concerning the functional form of this relationship. How does managerial quality mediate the relationship? As the results displayed in Table 4.6 and Figure 4.2 attest, skillful managers are able to avoid diminishing returns; and additional evidence suggests that they do so, at least in part, by economizing on their investment in external interactions – thereby avoiding too much of a good thing. High-quality management thus contributes directly – and also via its influence on the shaping of at least one important, externally directed management activity.

These findings are also consistent with the argument supporting the model, but it is helpful to note that they focus only on the behavior and influence of the top manager. The justification for the model, plus virtually the entire literature of the field, indicates that contributions of additional actors supporting the management function should also matter. While we do not test this proposition directly, we do so obliquely by examining the extent to which central staff capacity supportive of top management can reduce the internal/external tradeoff for school district superintendents. The findings (Table 4.7 and Figure 4.3) support the argument that central staff can buttress performance by supporting and contributing to internal management, thereby eliminating – or, at least, substantially reducing – the need for top managers to balance their internal and external responsibilities. By contrast, low central staff capacity can mean not only diminishing returns but, past a certain point, negative returns on performance from additions to external managerial effort. Bulking up with central staff should not be considered mere administrative padding, however; staff do entail fixed costs, and these need to be considered in managerial decisions. When we incorporate a full set of controls regarding resources and constraints, though, our analyses show that significant staff capacity is supportive of performance, and some of this contribution is apparent in the way that *others*, particularly top managers, are able to add performance value. Substantial central staff capacity alters the pattern of the externally conjured “serpent in the sand.”

All these findings are consistent with themes developed by astute observers and analysts of public management. That public management quality

matters, of course, is hardly news to specialists in public management and public policy. The field of public administration has developed a rich literature arguing for this notion; but to find management quality influencing performance directly, and consistently, in a data set spanning hundreds of governments over a several-year period is particularly persuasive evidence. While this chapter reports in detail on only one set of administrative units – and in one policy field, at one level of government, and, in fact, at only one level of management within that set – it indicates clear support for theoretical arguments that have been articulated for years by scholars and practitioners in the field. Any who doubt the importance of management and managerial quality for what can be delivered by public education in the United States should note the implications of this analysis for identifying a critically important point of leverage: in Texas, at a minimum, public management quality itself, not simply influences such as district spending or students' home circumstances, makes a difference. Furthermore, the consistent support for the importance of managerial quality in a number of other recent studies far removed from education in Texas suggests the general nature of the relationship.

In many respects, the results of this set of investigations are suggestive. Considerable additional work is warranted. The links between public management in its various additional guises and the results of interest to multiple stakeholders need to be explored more thoroughly, as is done in other chapters of this book. Even more work needs to focus on settings beyond those of public education. Considering the issues in the broadest possible context will require additional conceptual, theoretical, and measurement advances. More complex models need to be considered, as a part of this agenda. In addition, the implications for public managers themselves need to be unpacked more fully. In short, even if it can now be argued with persuasive evidence that the quality of public management shapes policy outputs, most of the important challenges remain to be addressed.

NOTES

1. Much of the material covered in this chapter has been presented by Meier and O'Toole (2002). We have redone the analysis to include managerial networking in the equations and have also included analysis by Hicklin, O'Toole, and Meier (2008).
2. Alternatively, it might be tautological: good management is whatever seems retrospectively to have produced good results – a special problem when perceptual measures of both management and performance are used (see Wolf 1993).

3. Since 1999 superintendent salaries in the large districts have approached \$400,000.
4. In the next chapter we analyze another stability-relevant theme: personnel and managerial stability, and how these influence performance.
5. The two are moderately correlated, but the relationship is not strong enough to pose a collinearity problem.
6. In analyses in subsequent chapters in which managerial quality is included as an hypothesized influence on performance, we use a measure calculated in the same way. Recalculating the residuals-based measure with other, more recent, time series data produces an even higher predictive ability in the salaries' equation.
7. The number of candidates for inclusion in education production functions is virtually limitless. Because many of the variables measure the same thing or relatively similar things, collinearity in these models is a problem. As a result, some variables may have an inappropriate sign. Because our concern is with having sufficient controls in the model rather than estimating the precise impact of each control variable, we are less concerned with collinearity.
8. In a 2000 survey of superintendents by the authors, 45.5 percent of superintendents rated TAAS scores as their top priority; no other goal was endorsed by more than 13 percent of superintendents. An additional 46.8 percent of superintendents rated TAAS scores as "very important." Surveys in later years show an even higher priority for TAAS or its replacement.
9. The specific question asked the superintendent to rate parental involvement and community support on five-point scales that ranged from excellent to inadequate. This 2000 survey had a 57 percent response rate, thus reducing the total number of cases for analysis.
10. A path analysis of the results of this second analysis shows that 72 percent of the impact of management quality is direct, with the other 28 percent indirect through community and school board support.
11. Note that we are limiting our analyses to linear specifications in this portion of the chapter. We recognize that our measure of managerial quality is likely to be controversial. To provide focus on the management quality measure, therefore, we have opted for relatively simple models of management. As explained early in this book, we believe that management operates in a contingent and nonlinear manner conditioned by structural context. Some of the chapters include analyses involving more complex models of management.
12. When community and school board support are included in the equations, the results are similar, except that the impact of management on black TAAS scores is no longer significant.
13. The n-size varies for these equations because the state reports results only when five or more students per district meet the category. Some districts, for example, do not have sufficient minority students to generate results.
14. The most likely answer of all is: from both.
15. The relationship between managerial quality and performance is not subject to these diminishing marginal returns and has a strictly linear relationship.
16. The difference in years reflects when the original analysis was done. Replicating all the analysis with 1995–2002 data produced similar results.

17. The squared term is significant only at the 0.10 level.
18. We believe that this approach will work for other management positions subject to competitive markets for which measures of program performance are available. Municipal agency heads such as fire chiefs, police chiefs, and public works heads may fit these conditions in some jurisdictions.
19. Alternatively, if one views this empirical study as a check on external validity, as explained earlier, the results are highly encouraging.